



LIGHT

the official

NEWSLETTER

of the Indian Society of Lighting Engineers

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FROM THE PRESIDENT'S DESK

It is now 2013 and the Mayan calendar notwithstanding we are still here. And for those of us in lighting, we are in great shape. The developments in lighting taking place will provide exciting and challenging opportunities in the near future.

And as I mentioned in my last column, the best place to keep abreast of the new developments in this rapidly changing field of ours is by participating in the important regional and global conferences. Together with other ISLE members I will be attending the Lux Pacifica conference in Bangkok in March and ISLE members will also be present at the CIE Centenary Conference in Paris in April. For those who have not done so, it is still not too late to register for these events.

ISLE has planned several activities for this year. With the Bureau of Indian Standards there will be a series of seminars to promote awareness and encourage use of the National Lighting Code.

We are in discussion with LRC, the premiere international lighting institution to once again conduct a two day course at 2 locations as they had done in 2010. Arrangements will be made to enroll participants that will benefit the most. ISLE would like some of the participants to further the knowledge gained within their respective organisations.

There are discussions taking place to study the possibility of launching the ISLE LET course at other universities. We have also succeeded in getting CIE Past President, Prof. Wout van Bommel to agree to conduct a one month course later this year.

The State Centres of course, are planning activities at the local level. This includes the launching of new Local Centres as well as Student Chapters. The Centres at MP, Mumbai and Pune continue with their monthly lecture



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programmes. Lectures and other programmes are also planned at the other State Centres.

2013 promises to be a busy year at ISLE.

Gulshan Aghi
President
gulshanaghi@gmail.com

EDITORIAL

Most discussion these days tends to be dominated by LEDs. This issue of our newsletter also has several items on the subject.

The ISA (International SSL Alliance) had a summit meeting in China in November. In this issue there is a detailed report on the event by Mr. P.K. Bandyopadhyay and a brief note on my observations. We have reproduced some of the award winning projects to share these developments with our members. Also included are some of the award winning entries of the student contest.

The paper on the future of office lighting by Jennifer Veitch looks at how solid state lighting coupled with smart controls will lead to greater energy saving and improved lighting quality and at the same time have a positive impact on health.

The WebWatch section gives a link to interesting developments in OLEDs as well as to a very thought provoking paper on the challenges that solid state lighting faces in forging a successful collaboration between the traditional lighting industry and the semiconductor industry which are inherently very different. There is also a link to the 2012 edition of the McKinsey report on the global lighting market.

We have reports from the State Centres in Kolkata, Mumbai, Chennai and MP on their activities. The last quarter has indeed been busy.

ISA Meeting in Guangzhou, China

The International Solid State Lighting Alliance (ISA) aims at bringing together the world of Solid State Lighting in order to introduce, promote, educate, standardise and facilitate match-making between international companies. The Past President of ISLE, Dr. Avinash Kulkarni is on the Executive Board while the undersigned has been appointed as an advisor.

I feel honoured and privileged to be invited to the 4th ISA Board meeting as an Advisor and I give below a summary of the main workings and conclusions of this meeting for the information of our members.

5 working groups have been appointed which have actively worked during the past year.

WG I - Strategies Research Agenda and Industrial Road Map. The work of this group has been accomplished and printed.

WG II - Global Showcase. This group decided to showcase the Top 100 SSL projects. A carefully selected Jury scanned entries to this competition and the winners were announced.

WG III - Ecosystem Development (Talent, education, training etc.). The group successfully held a training program for 35 CEO's in the Netherlands organised by DELFT University on behalf of ISA. The group also organised lectures of SSL for 100 students and lectures from US, NL, Germany and China at Chang Zhou.

WG IV - Dialogue on Standardisation and Testing. This group is headed by Mr. Mark McClear who is a Director of Cree and has identified the future course of discussions.

WG V Public Relations and Membership. Three major activities have been achieved

- i) Global student contest of SSL
- ii) Global Events of the Year focusing on all segments of the value chain of SSL
- iii) Global SSL Showcase - reflecting the best practice and best available technology.

Some of the decisions:-

- 1) There will not be any increase in the fee and ISA will make every effort to increase membership.
- 2) Conferences will be on sponsorship basis.
- 3) Improve and widen the scope of the contests with timely communication on an international basis.
- 4) Additional technical support was identified for each WG.
- 5) ISA will consider undertaking market studies on long term industry problems.
- 6) Invest in promoting the ISA brand internationally.
- 7) ISA will evolve a program to coincide with the UNESCO Year of Light in 2015.
- 8) In order to strengthen collaboration among emerging economies ISA will organise a BRICS countries summit (BRICS: Brazil, Russia, India, China and South Africa).

Objective of Strategic Research Agenda

- Provide guidance for global SSL Research
- Serve the global value chain.
- Connect and strengthen global high quality competencies.
- Enhance cooperation, between industry and academia.

Award Winners of Global SSL Showcase Top 100

City of Los Angeles LED Conversion project

The Great Hall of People - LED retrofit project
Light Centre Project across Africa
Green City in Nanyang
Tunnel Lighting Project in China

Award for SSL Event of the year 2012

Establishment of the State Key Laboratory of SSL
(China SSL Alliance)

First company to offer volume production of High
powered Silicon substrate-based LEDs (LatticePower,
China)

SC³ Technology Platform (Cree, USA)

World's first GaN on GaN light chip (Shuji Nakamura,
USA)

Philips Solar LED street lighting in Guiyang Village
(Philips, Netherlands)

Specific Plan on 12th FYP for SSL Science and
Technology Development, (Ministry of S&T, China)

Cairo to Cape Road Show (Philips, Netherlands)

Conclusion

ISA is younger than ISLE but it has a clear mission
and objective to become the technical voice of the Solid
State Lighting fraternity. The Alliance is driven by a very
strong secretariat which has motivated the contribution
of experts within its membership.

H.S. Mamak
Editor

CALCUTTA STATE CENTRE

Technical Programme

November 15, 2012, Kolkata

In collaboration with Wipro Lighting, ISLE Kolkata
State Centre arranged a technical programme at the
Central Government Hostel in the Nizam Palace, Kolkata.



Mr. A.K. Das Choudhury and Mr. A.P. Joshi

Though it was arranged at very short notice most Kolkata
based members were contacted and invited to grace the
occasion.

Mr Dipankar Dutta, Zonal Manager of Wipro
Consumer Care & Lighting and Mr. A.K. Das Chowdhury,
Secretary, ISLE, Kolkata State Centre, welcomed all the
members and guests present. Mr. Dipankar Dutta made a
brief presentation on Wipro products.



In the main part of the event Mr. A. P. Joshi, Chairman,
Calcutta State Centre, and Chief Engineer (EZ-III), CPWD
in his brief speech declared the names of the Convener
and team members for conducting Election of the State
Centre Committee 2012-14. At the end of the programme
Mr. P.K. Bandyopadhyay, founder fellow member of ISLE,
delivered a heart touching lecture encompassing ISLE as
well as the activities of Illumination Engineering both in
India and abroad.

The programme concluded with fabulous dinner.

A.K. Das Chowdhury
Secretary,
Kolkata State Centre

Election of State Centre

A meeting of State Centre members was called on
November 9, 2011 by the caretaker committee under the
Chairmanship of Mr. A.P. Joshi. A resolution was passed
to conduct the election of the Kolkata State Centre for
the year 2012-2014. During the meeting a four member
Board of Scrutineers was appointed with Mrs. Chandra
Banerjee as the Convener. The other members were
Mr. K.M. De, Mr. Goutam Ghosh and Mr. G.R.P. Rao.

Letters calling for nominations enclosing the
nomination forms were circulated to members with the
last date for receipt of nomination 5.12.2011 and the last
date for withdrawal of nomination 17.12. 2011.

The Board of Scrutineers received 8 valid nominations
by 5.12.11 for the 7 posts. On 12.12.2011 one nomination

was withdrawn for personal reasons. The seven nominated members were declared elected. The members of the new committee are given below.

Mr. Tapan Ghosal (F.0243L)
Mr. Biswajit Sengupta (F.0330L)
Mr. Harabandhu Mukherjee (F.0344L)
Mr. Kamal Sethia (F.0773L)
Mr. Sukanta Bhattacharya (M.1323L)
Mr. Dibas Banerjee (M.1450L)
Mr. Sankar K. Dutta (M.1572L)

The committee members elected the following office bearers:

Mr. Kamal Sethia, Chairman
Mr. Tapan Ghosal, Hon. Secretary
Mr. Sukanta Bhattacharya, Hon Treasurer

Annual General Meeting January 24, 2013, Kolkata

The AGM of Kolkata State Centre was held on January 24, 2013.

In the AGM the newly elected Committee took over charge.

The new Chairman, Mr. Kamal Sethia thanked the outgoing Chairman, Mr. A.P. Joshi and the interim Committee members for all their efforts. He also thanked Mrs. Chandra Banerjee for helping in the smooth transition to the new Committee.

He then highlighted the proposed plans of the State Centre.

There are plans to open a Local Centre in Odisha with some 50 members. It is also planned to hold a national level seminar in collaboration with the School of Electrical Engineering and KIIT University, Bhubaneswar on April 6 and 7 on Lighting for Tomorrow. He requested the help of all in registering delegates and helping to get sponsors for the event.

Plans are being made for a Conference and Exhibition at Bhasa Bhavan in the National Library in Kolkata. Dates will be informed in due course.

Also in the pipeline is a workshop at Madhupur (Jharkand) and a seminar in Patna with a view to opening up Local Centres in Jharkand and Bihar. A full day seminar is planned at Jadavpur University on International Solar Day (May 5).

The Chairman made a request to members to help with a membership drive. He also made an appeal for members to help with advertisement and entries for the ISLE Directory.

The Centre has decided to restore its old name as Calcutta State Centre.

MUMBAI STATE CENTRE

Breakfast with Light 6 December 2, 2012, Mumbai



Subject: Lighting Industry In India; Current Scenario & Challenges – An Insight

Speaker: Mr. Gulab Jha, Sr. Marketing Manager, Lighting, Anchor Electricals Pvt. Ltd (Panasonic Group)

In this interesting presentation Mr. Gulab Jha gave an overview of the progress of the lighting industry in India and its future trends. He highlighted the market



share of the major players with detailed statistics. As the availability of new light sources is emerging, so also is the demand increasing for better and energy efficient products. This brings in the need for better luminaires and lighting fixtures. It also brings in the need for efficient marketing channels, customer education with trained manpower to fulfill these needs.

India has a great opportunity of being a high-end lighting manufacturing hub for exports. For this, it needs to enhance its manufacturing capability and adopt international standards extensively. Training and knowledge sharing at all points of design, manufacturing and at the supply and installation chain end will enhance our capability to provide world class lighting products to a growing Indian and international market. In this emerging scenario ISLE has a greater role to play in educating technical manpower to meet this challenge.

Breakfast with Light 7

December 30, 2012, Mumbai

Subject: A Case Study of Yazoo Park Lighting Virar, Mumbai

Speaker: Mr. Anil Valia

In this wonderful presentation of a case study on design and installation of amusement park lighting, Mr. Anil Valia showed how good selection, cost factors and safety considerations can be brought together creatively to produce a colorful and enchanting effect with a 'wow' factor that not only attracts people of all ages in large numbers, but also ensures their movement safely in a high crowd area.

He explained how the careful selection of the manufacturer, installer and right type of light source was undertaken to achieve all the above requirements which has ensured a great and safe experience for the thousands of visitors to this park.



CHENNAI STATE CENTRE

Interactive Programme for Students

October 12, 2012, Chennai

The Chennai State Centre organised an interactive programme for final year students of the EEE branch of a local engineering college at K-Lite Industries in Chennai during their educational visit to the city. The students were given a rundown on the objectives and activities of ISLE. They were also given copies of the LED seminar books circulated during Lii2011 as well as the ISLE newsletter to promote their interest in ISLE membership.

The purpose of the interactive session was primarily to give the students an overall picture of the emerging trends in lighting technology and the future openings in this field. The discussions covered the topics of energy conservation, green concepts and solar street lighting. Forty students participated in this programme.

Education Programme for PWD Engineers

November 23, 2012, Chennai

A refresher programme for a select group of mid level engineers of the Tamil Nadu PWD involved in lighting was organised by the State Centre. The programme started with a presentation on energy efficient lighting systems highlighting the recent trends and developments in LED lighting systems. This was followed by a practical

demonstration of different types of LEDs, drivers and application luminaires. All participants were given a copy of the newsletter.

The programme was organised by the Secretary of the State Centre, Mr. Ilamathi. The participants were very appreciative of the useful updation on new developments in the field.

RAJASTHAN STATE CENTRE

Award for ISLE RSC

December 14, 2012, Jaipur

The Rajasthan State Government conferred an award to ISLE Rajasthan State Centre as an institution that has created awareness of energy conservation and energy efficient lighting among the general public and students through workshops, seminars and educational activities.



This took place during the award ceremony by the State Government for entrepreneurs, government industries, government departments and other organisations on December 14.

The photograph shows Mr. R.S. Saxena, Chairman Rajasthan State Centre receiving the award from Dr. Jitendra Singh, Hon'ble Minister for Energy and PHED, Government of Rajasthan.

MP STATE CENTRE

Lecture on Sports Lighting

October 28, 2012

The post Dussehra Sunday breakfast meeting came like a dhamaka celebration not only because it was the 36th uninterrupted Sunday seminar series of MPSC completing three successful years, but also because it was marked by the surprise presence of Dr. P.C. Barjatia, GB member based at Pune, and the visionary for ISLE Indore centre. The speaker was none other than the founder member and first secretary of ISLE Indore Local Centre, Mr. Rajendra Raje, Director Lotus Electronic supermarket group of companies, the topic sports lighting.



Mr. Barjatia being felicitated

Mr. Raje started his presentation with the mention of Kerry Packer of Channel 9 Australia and the visibility of the white ball in night cricket matches. He talked about the criteria for the lighting of sports arenas with reference to the general user requirement, active and passive users of lighting. He gave technical inputs on horizontal and vertical illuminance so essential for stadium lighting, illumination uniformity, type of light required for CCTV broadcasts, spectators and journalists and by the players themselves based on the illumination standards for different classification of sports. In particular, he stressed the need in sports complexes to avoid glare by proper aiming.

The Chairman, Mr. Akhilesh Jain thanked the audience and the entire team on the successful completion of three years of these monthly breakfast meetings. He also informed members about the ISLE-LET Diploma in Energy and Lighting Technology being offered by Mewar University.

Dr. P.C. Barjatia, ex-Chairman ISLE Mumbai State Centre, and present GB member blessed the Sunday meeting with his kind words of appreciation and zeal that have become an example for other centres all over India. This was followed by a vote of thanks by the Hon. Secretary, Mr. Dinesh Wadhwa. The programme was anchored by Dr. Alok Mittal, Director of Medicaps Institute of Indore.



Mr. Rajendra Raje

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The Importance of LED Lighting in Green Building Design

November 17, 2012, Indore

The 37th breakfast meeting and lecture was held in November at Hotel Amar Vilas in Indore. In his welcome address Mr. Akhilesh Jain, Chairman MP State Centre highlighted the achievements of MPSC and mentioned that monthly meetings and lectures on various topics of general interest related to lighting had been organised by the centre for the last thirty six months without interruption and that this would continue in future as well.

The lecture on LED Lighting and Its Importance in Green Building Design was delivered by Ms. Priya Jain, Design and Development Engineer from Surya Roshni. She started her presentation by highlighting the electrical energy crisis in MP and explained that 1.4 billion people across the globe have no access to electricity. This energy crisis coupled with other problems like increase in pollution, concern for ecological conservation has led to the increase in the demand for green buildings.

She explained that the term Green Building refers to a structure which is built using processes that are environmentally responsible and resource-efficient throughout the building's life-cycle: from design, construction, operation, maintenance, renovation, and demolition. This requires close cooperation of the design



Ms. Priya Jain

team, the architects, the engineers, and the client at all project stages. The green building practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. Although new technologies are constantly being developed to complement current practices in creating greener structures, the common objective is that green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:

- Efficiently using energy, water, and other resources

- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environmental degradation

Ms. Priya Jain explained that for sustainable site planning and ensuring energy efficiency optimum lighting should be carried out through LED lighting.

The use of LED Lighting permits an optimum blend of the four elements of lighting; Luminous Flux, Luminous Intensity, Luminance and Illuminance.

She gave a comparative analysis of FTLs and CFLs and stressed the fact that they contain the harmful element Mercury which degrades the environment if not properly disposed of after the useful life of these lamps is over. The used FTL/CFL can impair the working of the nervous system, immune system and genetic system in the human body if disposed of in water and can even endanger marine species. LED lighting on other hand is far better as it consumes less electric energy, has better life and does not have adverse effects on human health.

She also explained that dimming should be carried out when less lighting is required to achieve energy efficiency. Similarly lights should be turned on only when occupants are available in buildings and lights should get turned off when daylight is available in abundance through the deployment of occupancy sensors and daylight sensors. The various other measures include optimum utilisation of renewable energy sources like solar energy for lighting and reduction in light pollution. She summed up her presentation advocating compliance with the Energy Conservation Building Code (ECBC) to achieve further sustainability.

The programme continued with celebration of birthdays of ISLE members and musical presentations given by ISLE members of MPSC Indore and ended with dinner. Attended by ISLE members of MPSC with their spouses and other family members, the event was coordinated by Mr. Shailendra Kulkarni and the vote of thanks was proposed by Mr. Dinesh Wadhwa, Honorary Secretary, MPSC.

Lecture on Light Therapy

December 30, 2012 Indore

The 38th uninterrupted monthly meeting and lecture of ISLE MPSC was organised on December 30, 2012 at Hotel South Avenue in Indore. The Breakfast Seminar marked a befitting end to the calendar year 2012, with the resource person this time as Dr. Alok Mittal, Director (Management), Medi-Caps Institute of Technology and Management, Indore. He delivered a presentation on the

topic of Light Therapy, the first in the monthly lecture series on medical applications of Light. Mr. Sameer Kotwal of Friends Combine, Indore introduced the speaker to the audience.

This lecture was sponsored by Oscar Electricals, Indore and was the first fully sponsored lecture programme.

To begin with all the ISLE members of MPSC and observed a two minute silence as a mark of respect to the departed soul of the Delhi gang rape victim. Thereafter the programme started with the welcome address of Shri Akhilesh Jain. He announced the availability of the Directory of the Lighting Industry in India published by ISLE and informed that this publication could be bought at a price of Rs. 550 per copy inclusive of courier charges. He informed the members that the diploma course in lighting designed by LET, UK was now available in India through ISLE and Mewar University, Rajasthan. He further mentioned that efforts would be undertaken to initiate such a programme in MP through a reputed University or a premier Institute.

Dr. Alok Mittal started his presentation by explaining the evolution of Light Therapy. He discussed the various characteristics of light required for bio medical applications. He explained that Polychromatic, Incoherent, Synchronized and Low Energy light is required for optimum body tissue penetration for minimising the heat effects and for photo bio-stimulation.



Dr. Alok Mittal

He further went on to elaborate the basic sciences for organs of the body and the absorption and adsorption of light and its effect on DNA and RNA in blood vessels.

The speaker showed the progress of a wound in the foot healed by Light Therapy within four weeks. Dr. Alok

Mittal explained that patients suffering from pain in the lower back, elbow joints, knee joints, ankles, shoulders, neck and wrists, could be treated by Light Therapy. Light Therapy finds applications in various clinical fields like Dermatology, Rheumatology, Pain Management, Care of elderly people, Sports Injuries, Occupational Therapy, Stimulation of Tissue Repair, Post-Surgical Therapy, to name a few. The effects of Light Therapy through Infra-Red Light, White Light, Blue Light and Red Light, for dermatological applications were substantially covered.

The presentation concluded with care and precautions necessary during use of Light Therapy. High Frequency and Variable Intensity Light Therapy for Optical applications, Skin Cancers and Cataract treatment along with use of therapeutic lamps, and UV light for tanning of skin were also highlighted in the presentation.

Interesting questions and answers on bio-medical lighting followed the impressive presentation. Mr. Rajendra Raje, Committee Member, MPSC announced the names of ISLE members whose birthday fell in month of December. Thereafter the celebration of birthdays and the New Year - 2013 took place. The programme was anchored by Mr. Vivek Barve, Member, MPSC and the vote of thanks was proposed by Er. Dinesh Wadhwa, Hon. Secretary, MPSC. The seminar concluded with the meeting of the State Centre Committee.

Er. Dinesh Wadhwa,
Honorary Secretary
ISLE, MPSC

OTHER NEWS

Industry Institute Interactive Programme

December 22, 2012, Kolkata

The School of Illumination Science, Engineering and Design (SISED) at Jadavpur University organised an Industry Institution Interactive Programme on the Latest Developments and Challenges in Different Fields of Artificial Lighting Design. Intended to highlight the connection between Architecture, Art and Technology in lighting design, the programme was funded by the Technical Education Quality Improvement Programme (TEQIP) and was held in the Electrical Engineering Department of Jadavpur University.

The main objective was to update knowledge on artificial lighting and introduce practical approaches to energy efficient lighting. The occasion was also used to felicitate renowned stalwarts from the lighting world for

Continued on page 22

Imagining the Future of Office Lighting: Smart, Sustainable, Solid-State

Jennifer A. Veitch and E. Erhan Dikel

This is a time of revolutionary change in the lighting industry. Solid-state lighting (SSL) systems are on track to achieve lighting efficiencies for general lighting in excess of 150 lumens per watt (lm/W) in the not-too-distant future (see <http://www1.eere.energy.gov/buildings/ssl/>). This is double the typical performance of the ubiquitous linear fluorescent systems in use today. The total system performance could be further improved by the addition of smart controls, which include occupancy sensing and daylight harvesting, among other features. These controls are easier to implement with SSL systems because of SSL's digital nature. Interestingly, SSL systems also offer other new functions for interior lighting that have yet to be fully explored.

Having started in 2008 to consider what these new functions might be, and how they might be used, our team at the National Research Council of Canada is convinced that further development of these concepts will lead to greater energy savings for lighting, faster adoption of SSL lighting technologies, and improved lighting quality. This summary shows what we think in 2012 that the future will hold.

Colour-Tuning for Preferred White Light

Over 15 years of laboratory and field research at NRC has demonstrated that individual control over workplace light level delivers benefits for the environment, individuals, and employers. On average, individual control over light level reduces energy use by ~10% over the typical fixed light level provided, because although some people desire a higher level, many others choose a lower level [1,2]. Obtaining one's preferred light level improves the individual's mood, which in turn contributes to better well-being and increased work focus [3]. The employer benefits in two ways: reduced energy costs and reduced human resources costs in the form of improved retention and reduced health problems for employees [4].

SSL offers another dimension for individual control: Colour-tuning capability. By using a combination of light-emitting diodes (LEDs) with varying colour outputs together with a luminaire design to mix the outputs and controls to dim each LED separately, one can choose the spectrum of the light to which one is exposed. We believe that a properly designed colour-tuning system can deliver a desirable range of white light conditions that will enable individuals to achieve their preferred conditions and trigger the same set of desirable outcomes as has been observed

with light level control. Adding new features will help to sell the new technology, which despite its energy efficiency and longer life will have a higher first cost than fluorescent systems for some time to come.



Figure 1. The scale model.

We started experimental work with a scale model experiment in which we examined the range of colour temperature and spectral power distributions of participants' preferred lighting conditions. Figure 1 shows the scale model, which was a realistic 1:6 model of an open-plan office. Participants viewed a set of five pre-set LED spectra and one fluorescent lamp, and judged the appearance of the model; then they had the opportunity to modify the lighting to choose their personal preferences. In this case they had five LED channels to independently vary: red, green, blue, warm white and cool white. As predicted, people chose a wide range of different spectra (Figure 2). We can express the central tendency as an average (the median correlated colour temperature [CCT] was ~ 4300 K), but as is clear from this chart, individuals differ widely from one another.

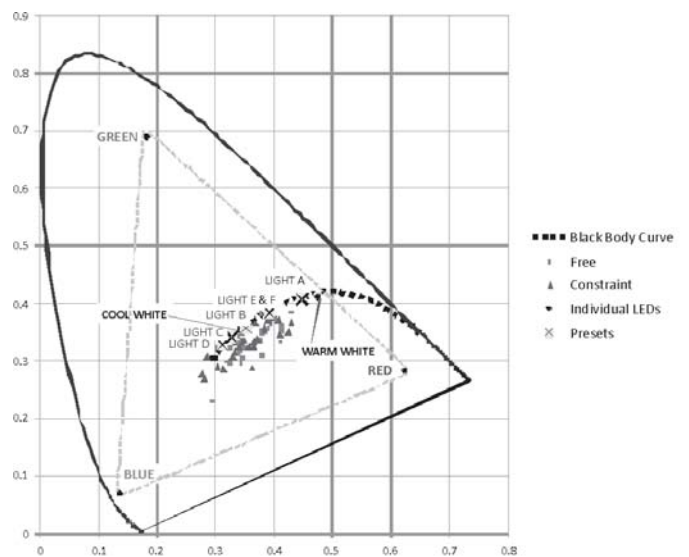


Figure 2. LED choices plotted on the 1931 CIE chromaticity diagram.

The yellow dotted lines mark the boundary of possible conditions with these 5 channels.

Next, we shifted to full scale. When we began this work there were no commercially-available luminaires for general office lighting that offered the range of colour-tuning capabilities we needed for this experiment. We designed our own, and created a custom interface to allow individuals to choose a colour by moving a cursor over a colour chart (Figure 3). Participants in this experiment worked under a fixed spectrum of our choosing during the morning (a CCT of either 3000 K [warm white) or 6500 K [cool white]); half continued in the afternoon with this same condition, and half had the opportunity to choose their own spectrum with the colour picker. Those who worked under the fixed condition all day used the colour picker once, at the end of the day, to choose a preferred spectrum.



Figure 3. Colour Picker interface. The RGB values changed dynamically as participants clicked and moved the mouse (+); unclicking would fix the values. The O symbol marks the previous setting.

The results from this simulated office setting showed, again, a wide range of preferred light spectra. Importantly, they also showed that when people were given the opportunity after lunch to choose their own spectra, their mood improved, an improvement that remained stable for the remainder of the day (Figure 4). The people who had colour-tuning all afternoon used it frequently - far more frequently than people use light level controls in similar experiments - and it seemed from this and from their comments to us that the novelty of the system was a

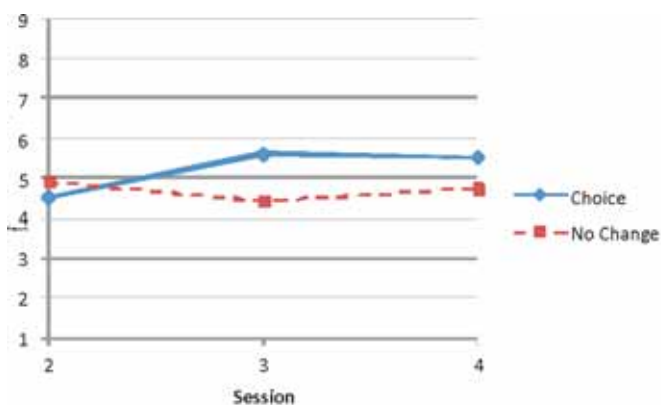


Figure 4. Colour-tuning x Time effect on pleasure. Session 2 mood measurements were before lunch; Sessions 3 and 4 were immediately after lunch and after the p.m. coffee break, respectively.

factor. Most people are unfamiliar with the concept of varying tints of white light as well as with the concept of individual choice in the matter. Whereas people may know through experience what light levels they prefer, they lack the experience to immediately hone in on their preferred light spectra. We also found, with drilling into our data, that this interface design was not the ideal choice for delivering subtly-different lighting conditions.

Overall, the work on colour-tuning tells us that we are on the right track. There is a broad range of individual preference for light source spectrum, and it appears that being able to obtain this preference leads to a more pleasant mood. With more familiarity with these concepts, and with an interface that can more easily deliver the preferred conditions, we expect to demonstrate the value to individuals and their employers of this novel feature.

Smart Controls

SSL systems, being semiconductors, are easily controlled using digital signals. Advanced control systems would add considerably to the potential energy savings that a change from conventional fluorescent systems could bring. Among the possible control options that we have considered is a smart lighting feature under which only those lights in the neighbourhood of an individual are turned on. As the occupant moves, the set of luminaires that is on moves with them. Part of our work thus far was a thought experiment with energy calculations showing the sizeable energy savings that such a system might deliver; see Table 1 for the result. For these calculations, all luminaires were commercially available products consuming 38 W per luminaire and with the same 70 lm/W light output. The smart control system with LED

Table 1. Energy consumption comparison of four lighting & control conditions in a corridor space.

	Control System		Energy (kWh/yr)
Fluorescent	On/off switch	9 luminaires on 100%, on from 07:00 to 19:00; 1 emergency light on 24/7.	1318
Fluorescent	Occupancy sensor	100 % instant on occupancy. Full output for 5 min. Dim to 50% after 5 min., and keep it at this level until occupied again. Emergency lighting on occupancy sensor.	737
LED	Occupancy sensor	100 % instant on occupancy. Full output for 5 min. Dim to 50% after 5 min., and keep it at this level until occupied again. Emergency lighting on occupancy sensor.	737
LED	Smart controls	Three luminaires over occupant 100% output, the rest 50%. Emergency lighting on occupancy sensor.	553

luminaires would consume 42% of the energy annually that the base case condition would. As LED products with higher efficacies come on the market, the benefit for the LED systems will increase. The next steps toward creating such a system are to build a prototype and to conduct lab bench and field trials to establish its usability and to demonstrate real energy savings.

Novel Features

Through a design charette with lighting designers and industry representatives, we engaged in open-ended consideration of possible new features and form factors for SSL lighting. One of these addressed the widespread desire among office workers for a view of the sky - something that many large office buildings cannot deliver to their interiors. Using a webcam (installed on a north-facing window two storeys up) to capture an image of current conditions, and an array of LEDs to provide a low-resolution image of the sky, we built a demonstration of an artificial sky with red-green-blue LEDs (Figure 5) and installed it in the windowless basement cafeteria of a



Figure 5. The three components of the artificial sky luminaire

building at a government laboratory. Informal feedback from employees suggested that this feature improved the interest of the otherwise featureless room. Other simple images, messages, or lighting features can also be displayed on this luminaire. (Coincidentally, our counterparts at the Fraunhofer Institute in Germany also built a similar device: see <http://www.fraunhofer.de/en/press/research-news/2012/january/sky-light-sky-bright.html>.)

Flicker

The electronic circuits that power solid-state lighting have many different designs; power supply and driver designs depend on factors such as cost, energy consumption, size and complexity. As a result, and unlike other light sources, there is no intrinsic operating frequency for SSL. Measurements of off-the-shelf LED replacement lamps show widely differing variations in light output, from nearly constant (no luminous modulation, or flicker), to low-frequency and high-amplitude luminous modulation seen in the past with fluorescent lamps run on magnetic ballasts (100-120 Hz), to high-frequency flicker with complex waveforms. This diversity is

potentially problematic because in some ranges of flicker, even when the viewer cannot report perceiving the luminous modulation (e.g., 100% modulation at 150 Hz), there can be adverse effects on health and well-being [5]. In 2008 the IEEE formed a standards committee, PAR1789, to establish recommended practice for LED light source flicker to prevent any occurrence of these problems; NRC has a member on this committee. One outcome thus far has been the identification of gaps in the scientific literature. NRC is working with other members of the IEEE PAR 1789 committee to fill in these gaps: specifically, we need to establish the conditions of luminous modulation that are most likely to cause serious problems, so that international standards can aid manufacturers to design effective, safe products that do not show any luminous modulation with the identified conditions. These conditions might include the waveform, duty cycle, and amplitude of modulation as well as its frequency; none of these parameters was controllable with incandescent or fluorescent systems, so nothing is known about their effects on viewers.

The Future of Office Lighting

This is a very exciting time for the lighting industry and those affiliated with it. SSL in all its forms are an important part of reducing the total energy use of all buildings, and advanced controls properly applied will ensure that the lights are on where they are needed, only to the correct intensity, and only when they are needed. As the new sources advance in development, new functions and new form factors will make interiors look better and deliver better lighting quality than was possible with any of the previous light sources. These advantages promise a future in which we can use lighting not only to make fine details visible, but to improve our health and well-being - outcomes that will benefit employer and employee alike, making this new technology even more appealing to all.

Acknowledgements

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Continued on page 22

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ISA Global SSL Showcase



▲ Before



▲ After

City of Los Angeles LED Conversion Project

Major features and high-lights

- The largest LED retrofit ever undertaken globally.
- Targeting 140,000 of the city's more than 209,000 streetlights.
- Return an estimated \$10 million in energy and maintenance cost savings.
- Avoid 40,500 tons of CO₂ emissions each year.

Energy saving performance and environmental impacts

- Realized energy savings of over 50Gwh.
- Reduced CO₂ emissions by 29,500 Metric tons so far.
- Reduce 40,500 Metric tons and save \$10 million annually.

Showcase Team

City of Los Angeles-Bureau of Street Lighting

Responsible for design and implementation of the project.

City of Los Angeles-Mayor's office

Establish a collaborative working relationship with the Clinton Climate Initiative to study the city's environmental initiatives.

City of Los Angeles-Department of Water and Power

Utility company which facilitated energy rebates and loan for the successful implementation of the project.

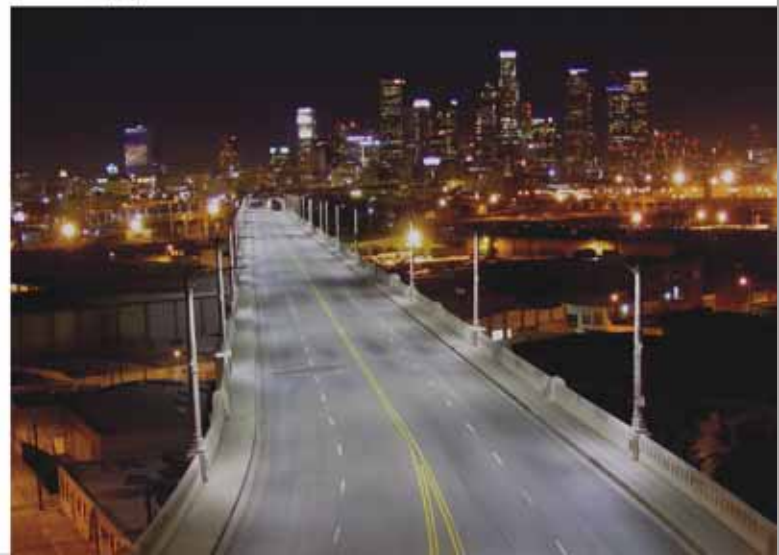
Clinton Climate Initiative

To improve the energy efficiency of street lights systems through a combination of technical, purchasing and project assistance.

▼ Before



▲ After





The Great Hall of the People and the surrounding rooms

LED Lighting Retrofit Project

Major features and high-lights

- Very high importance, hence requires product and system with good reliability and maintainability.
- Under the condition of CCT=3000°k, Ra>85, the source efficiency >85lm/w
- Small size, high illuminance, high efficiency light source design and production. CCT=3000°k, Ra>85, source efficiency >85lm/w, one lamp output 1280lm, luminous flux maintenance factor in 3000hours >96%.
- Complete joining up 6000 LED light sources ($\leq 15W$) with TRAIC dimming system, realize 3%~100% smooth dimming property.
- Improve horizontal illuminance with 30%, cylindered illuminance 100%, meet HD Tv broadcast demand
- Saving 85% energy.

Energy saving performance and environmental impacts

The overall efficiency of the lighting system is 7 times of the original one, reduces 85% heat. Accordingly, it can save 6625 KWh electricity in one hour, save 804kg standard coal; reduce CO₂ emission of 2002kg, SO₂ 60kg, NO_x 30kg, carbonaceous dust 547kg.

Showcase Team

HeBei Lede Electronics Co., Ltd
LED light source supplier and lighting system installation contractor

Dongguan Kingsun Optoelectronic Co., Ltd
LED light source supplier and lighting system installation contractor

Guang Zhou Hedong Electronics Co., Ltd
Control system supplier



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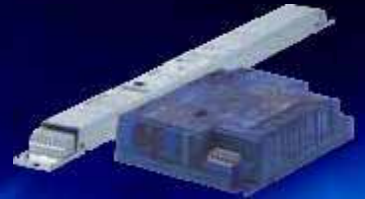
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PC COMBO



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TMDD



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powerLED control gear



OMTA



ZRM terminals

ISA Global SSL Showcase



Light Centres project across Africa

Major features and highlights

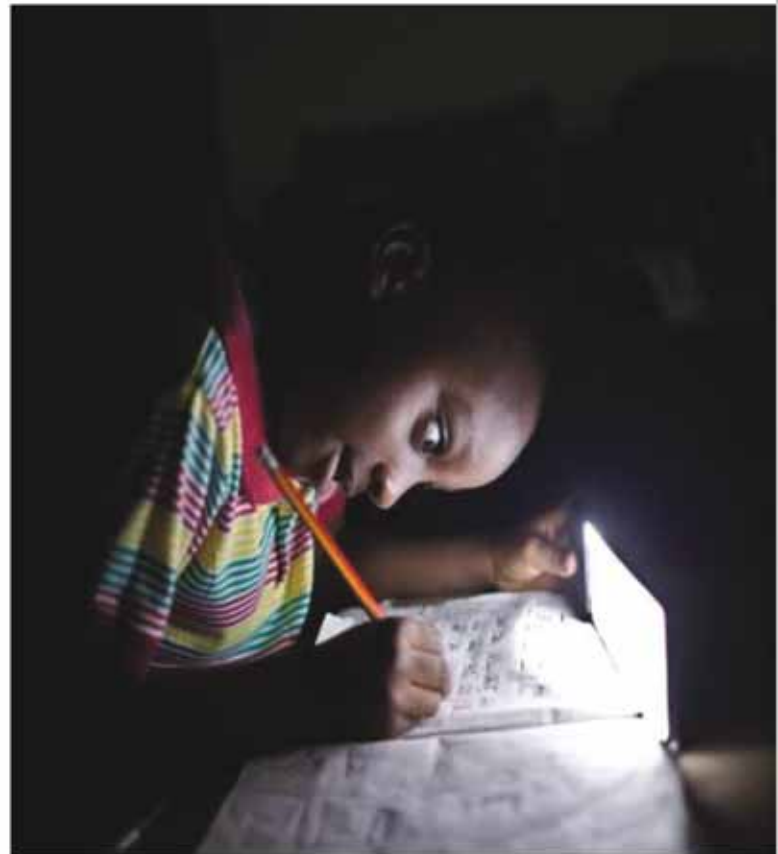
Philips announces breakthrough initiative to provide solar powered LED lighting for 100 small soccer pitches or “light centres” for rural communities across Africa

- In August 2012, at the conclusion of its third pan-African Cairo to Cape Town road show, Philips announced a new initiative, which will see the installation of 100 solar powered LED “light centres” across rural Africa by 2015.
- The light centres, will be focused on schools which are closely linked to villages and towns in off-grid or semi-grid areas.
- The light centres will provide communal areas which can be used for sport, education, healthcare, commerce and social needs. The intention is to extend the day by enabling communal life after the sun sets and creating safer areas.
- Philips has committed an investment of more than Euro 2 million to this project. Maintenance would be self-sustaining as local authority/owners can rent out the light or advertising space and generate an income.

Energy saving performance and environmental impacts

The overall carbon footprint is minimal and during the usage phase almost zero.

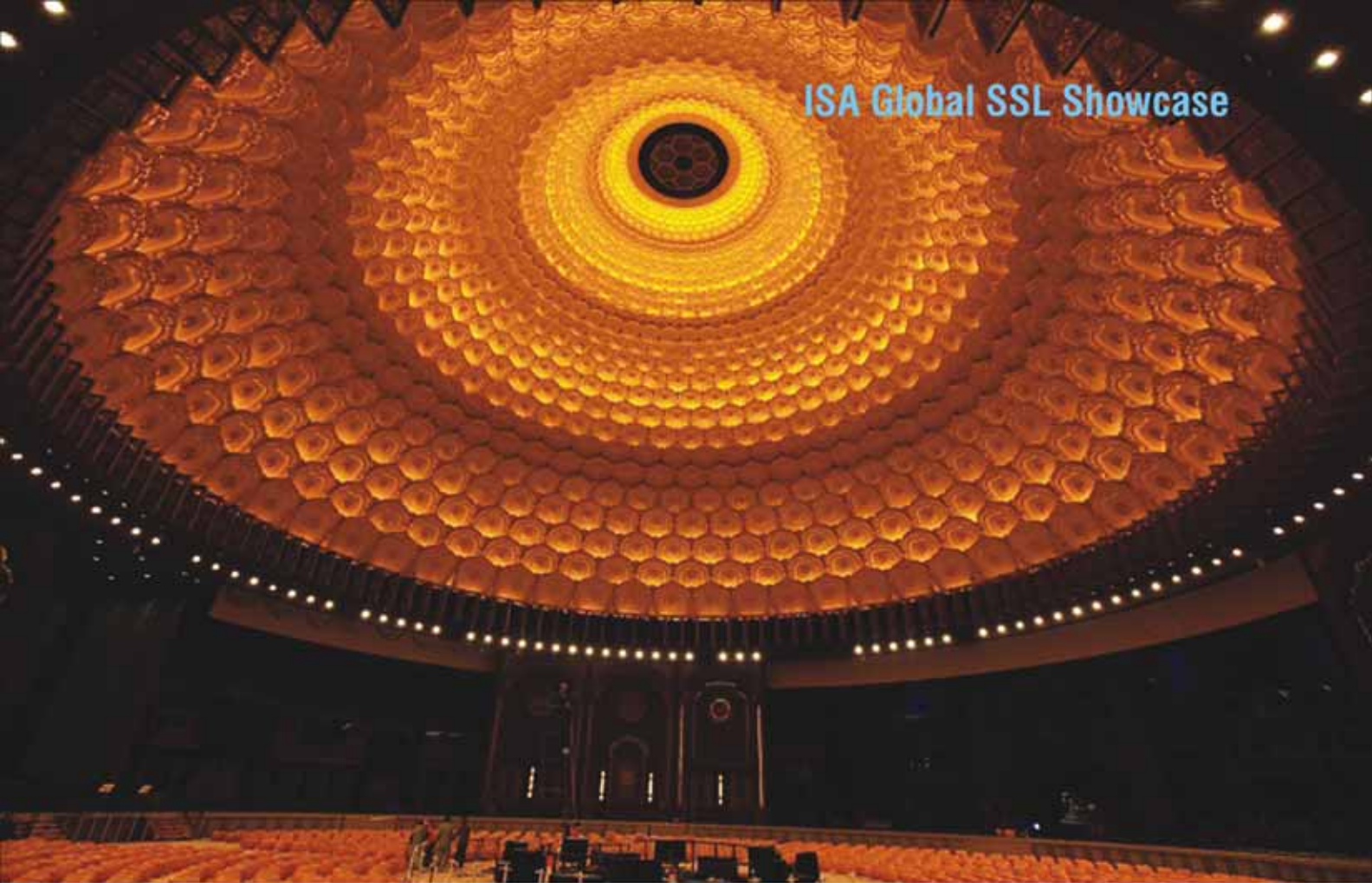
The amount of light we are now able to generate in this way is astonishing and has only just become possible due to recent breakthroughs in LED lighting—A total package of 24000 lm provides up to 20 lux on a 800-1000m² area.



Showcase Team

Philips Lighting Africa team
Local implementation

Philips Solar Lighting Solutions Shanghai team
Technical support and product supplying



LED Illumination Project of Fangong Palace in Lingshan, Wuxi

Major features and high-lights

Fangong of Lingshan takes up a very large area as 70,000 square meters, with 150 meters long in the front and approximate 180 meters long from front to back. The Fangong is comprised of the Lobby, the Tower hall and the Holy altar.

The designing theme: Showing the profoundness and nobleness of the Buddhism by lighting, make the palace a legendary building of the world, which is full of traditional culture and innovative elements.

The principles of the luminaire selection: beautiful appearance, long life span, anti-corrosion and anti-aging materials, energy saving and environmentally friendly.

Energy saving performance and environmental impacts

By using LED lighting technologies and products, it must achieve the dual effects of keep the Lobby's artistic value and also create the unique theme from the lighting environment when using the means of lighting as interpretation and display.

The reasonable luminaire arrangement can make sure the uniform illumination of the Lobby, and also the appropriate lighting distribution, no glare, easy to repair and maintenance, safe, neat, attractive, and harmony with the structure.



Showcase Team

Roled Opto Electronics (Shanghai) Co., Ltd.

Designer and Supplier



FIRST PRIZE

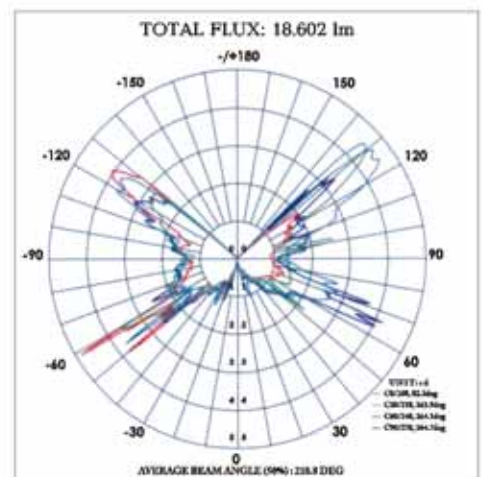
Design Concept

The inspiration of the lamp comes from the Tibetan Prayer Wheels. Tibetan people traditionally rotate the prayer wheels to express their devotion to the Buddha. This quality of the prayer wheels is just like what "light" gives us. Therefore, we integrate the sacred prayer wheels and light in our design.

The design has adopted the structure of the prayer wheels: Lamp-chimney with carvings on it which can rotate, and light can pass through the carvings to show the patterns of "mani mantra" on the wall, which can highlight the sacredness and solemnity of the cultural relics.

Features and advantages

1. The sutra-turning tube "mani" lamp using pure handmade material for the lamp body and lamp holder of the basic structure. Light body hollow fonts were made using electric drill, file, grinding sandpaper and other tools. The stability of support structure of lamp body plays a strong role. The shaft center position is installed with acrylic materials crystal spliced "lotus".
2. The LED lighting products use pyroelectric infrared sensing technology, when someone close to the lamp body, an infrared sensor (a separate switch is designed) will detect the body heat and emit infrared, thus driving the motor to rotate the lamp body at a constant speed of 6r/min.
3. The LED model PWM pulse light modulation technology (it is equipped with separate dimmer knob), so that the lamp can be used in a different environment. the use of intelligent dimming technology to be more energy-saving, environmentally friendly.



Title of Work

Prayer Wheel "ma ni" Light

Team Members

Sun Heyuan, Liu Xiaoting, Lin Miamomiao, Shi Dan, Wang Xinyu

Applicable Arena

Installation location can be outdoor corridor used as lighting lamps, or indoor used as partition, decorative lamps and lanterns or used alone.

ISA Global Student SSL Contest



Title of Work
Gela light

Team Members
Liu Yatao, Xie Zeyu

Applicable Arena
Corridors and indoors



SECOND PRIZE

The outer appearance is octahedral trapezoidal combination and made of white cloth with sidepainted with Tibet Babao (Eight Precious things). The colour is mainly white and red in accordance with the Potala Palace theme tone.

SECOND PRIZE

This product (YI MING) is for the courtyard lighting of the Potala Palace. The inspiration of the design comes from a very famous Tibetan musical instrument called Gang Dong, which is also a religious instrument.

The advantages of YI MING are as follows: it is one of the symbols of Tibetan Buddhism and it is closely related with Tibetan culture and Tibetan Buddhism. We design the lamp so beautifully and so adjustable that it can be in perfect harmony with Potala Palace. The cost of the lamp is low with long life and energy saving characteristics and its large-scale manufacturing is workable, so we believe this product has very great potential.



Title of Work
YI MING

Team Members
Ma Yongchao

Applicable Arena
Courtyard of the Buddhist temples

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Continued from page 9

their pioneering contributions in this field. The programme coordinator was Mr. Suddhasatwa Chakraborty, Assistant Professor, Electrical Engineering Department and the inaugural ceremony was conducted by Dr. Suchandra Bardhan, Joint Director, SISED.



Prof. N.K. Deb felicitating Prof. S.R. Bandyopadhyay

After the lighting of the lamp by the dignitaries, the Hon Vice Chancellor, Prof. Souvik Bhattacharya gave a thought provoking inaugural address. Prof. Ashoke Nath Basu, Former Vice Chancellor spoke on research areas in modern lighting. Prof. Partha Prathim Biswas, Nodal Officer TEQIP spoke on the objectives and goals of the programme. Prof. Saswati Mazumdar, Director SISED elaborated the support from TEQIP for different academic activities. She also gave details of the Illuminatin Engineering laboratory infrastructure and facilities.

The following were felicitated for their contributions to lighting:

Prof. S.R. Bandyopadhyay for his contribution to Lighting Education

Mr. P.K. Bandyopadhyay for his contribution in creating Lighting Awareness

Late Mr. Tapas Sen for his lifetime achievement in the field of Creative Lighting (the award was received by his son, Joy)

Mr. Kanishka Sen for his contribution in Stage Lighting

Mr. Soumendu Roy for his contribution in Cinematographic Lighting

Mr. Sridhar Das for his contribution to Entertainment Lighting

The awardees reminisced about developments in their field. Mr. P.K. Bandyopadhyay recalled the growth and development of ISLE.

This was followed by a series of technical lectures by industry experts.

Ms. Sudeshna Mukhopadhyay, Philips Electronics, - Latest Changes in Lighting Application



Ms. Sudeshna Mukhopadhyay

Prof. Susanta Bhowmick, Consulting Engineering Services - Concerns of the Consultant for Effective Design of Outdoor Lighting

Dr. Rajat Subhra Mandal, Osram - Transition to Solis State Lighting

Mr. Tulin Banerjee, Jayanta Lamps - Importance of Incandescent Lamps in the Modern Era

Mr. Dipon Sarkar, Marc Eco Lighting - Energy Efficient LED Lighting

Mr. Sirsendu Paul, GE Lighting - LED Application and Reliability

The session wound up with a vote of thanks by Prof. Saswati Mazumdar.



Dr. Rajat Mandal

Report on ISA 2012 E3 SSL Summit Session

November 5-7, 2012, Guangzhou, China

P.K. Bandyopadhyay

In the beginning of August 2012, International Solid State Lighting Alliance (ISA) invited me to be a member of the Jury Panel for the ISA Global Solid State Lighting Student Contest (GSC). They also informed me that the GSC Award Ceremony would be held during the ISA 2012 Emerging Technology (E3) SSL Summit Session at Guangzhou, China and also invited me to attend the Award Ceremony as well as the Summit Session.



I am pleased to give a report on the above visit for the benefit of ISLE members and particularly those interested in Solid State Lighting.

This Summit Session was held in conjunction with the 9th China International Forum on Solid State Lighting (CHINASSL 2012). Supported by Ministry of Science and Technology of People's Republic of China, CHINASSL has been held successfully for 8 years since its inception in 2004, and has become the largest annual event in Solid State Lighting industry in China. With the aim of accelerating innovative development of LED manufacturing equipment, materials, technologies and products, CHINASSL strives to provide an international cooperative platform for each segment of the whole SSL industrial chain, and dedicates itself to expanding the largest market for SSL industry and serving to enhance SSL companies' commercial value.

There were a series of lecture programmes organised in parallel sessions, where papers were presented by well known experts such as Prof. Wout van Bommel, Past President of CIE.

About ISA

- ISA is a not-for-profit NGO
- It is an international alliance of regional alliances and associations, renowned universities and institutions and leading companies in the SSL field.
- It is an independent legal entity which aims to enhance public-private partnership and intensify global cooperation to accelerate and faster the sustainable development of SSL.

The Mission of ISA:

International cooperation using global initiation, effort and resources to

- 1) Accelerate and foster the development of the global SSL industry and applications;
- 2) Enhance people's lives and to create a green and sustainable society.

The President of ISA is Ms. Wu Ling, who is also the Secretary General, China SSL Alliance (CSA).

The Secretary General of ISA is Mr. Ruisheng Yue

Six Associations and Societies are the Executive Members. ISLE is one of them, others are;

Optoelectronics Industry Development Association;
China SSL Alliance;
Korea Association for Photonics Industry Development;
Illuminating Engineering Society of Australia and New Zealand; and
Taiwan Optoelectronic Semiconductor Industry Association

The Council of Management comprises 5 members from the Executive Member organisations. Dr. Avinash D. Kulkarni is one of them.

There is a 10 member Board of Advisors. Mr. H.S. Mamak is one of them.

ISA has 62 members, including many leading industrial players, renowned universities and institutions, and associations and societies.

ISA functions through 5 working groups:

- WG1: Strategic Research Agenda & Global SSL Industrial Roadmap
- WG2: Global Showcases
- WG3: Ecosystem Development
- WG4: Dialogues on Standards & Testing
- WG5: Public Relations & Membership

Global Student SSL Contest

The First ISA Global Student Contest (GSC) was one of the important promotions of public awareness of LED lighting. The contest aimed at exploiting undergraduate college or graduate student's innovation potential, collecting innovation resources, and forming an achievement for a transformation chain of innovation, research, development and industrialisation together with the active participation of enterprises.

The GSC included 3 categories:

- LED Luminaire Design for World Culture Heritage, "The Potala Palace Tibetan Style LED Luminaire Design".
- LED Luminaire Design for Africa
- 3D LED Display Design.

The GSC Jury Panel had 7 members from industry, non-government bodies and academia from different countries.

Highlights of Rules of Contest and Judgement Criteria For Potala Palace

- Entries should be original, novel and practical
- Contestants need to fully consider the market value, feasibility and reliability of the entries
- Only white LEDs to be used
- Entries should reflect Tibetan and Potala Palace cultural features
- Design should be simple and elegant, small in size, easy to conceal and not harm cultural relics. It should rather strengthen the appeal of the Buddha hall and other typical religious buildings
- Lighting should meet the quantitative and qualitative requirements such as comfortable ambient and brightness, proper light distribution, CRI, colour temperature and colour appearance
- Luminaires should have safety measures, energy saving features like integration of dimming and intelligent control system, fault recognition and notification system.
- A single luminaire should not consume more than 30W and temperature to be limited to 45 degree Celsius.
- Light should not adversely affect surrounding environment, properties of illuminated surface and cultural relics like internal structures, religious scriptures, Thangkas, cultural relics etc.

Judgement Criteria and Scoring:

Creativity 30%, Aesthetics 15%, Completeness and Thematicness 15%, Techniques 30%, Online voting (anonymous) 10%.

At the preliminary stage, 50 entries were sent to the Jury members for judgment. About 200 students from 10 universities participated in this contest. Many of the entries had even 5 team members.

Based on the scores given by the Jury members and online voting, 28 entries were short-listed by ISA. In the final stage, the finished samples were received by ISA, who then got their performance tested and made a list of indices on CRI, colour temperature, light distribution, efficiency, safety, central system etc. Fresh scoring was done by the Jury members using these indices according to the above judgment criteria, which led to the decision on the 1st prize, two 2nd prizes and three 3rd prizes (see page 20 & 21)

For Africa

Rules of contest were more or less same as for Potala Palace, except that entries should reflect Africa's ethnic and cultural style and luminaires should be suitable for use in the African environment.

Judgment Criteria and Scoring

Creativity 30%, Aesthetics 10%, Completeness 15%, Reliability 10%, Adaptability 10%, Cost effectiveness 15%, online voting 10%.

5 entries from 3 universities of 2 African countries were received.

3D LED Display Design

Entries were received from Delft University of Technology, the Netherlands; University of Sydney, Australia; and Changchen Chinese Academy of Science.

Most of the above entries from 3 categories of contest were displayed in the exhibition area outside the conference hall.

Awards were announced in the opening session of the ISA meetings on November 5 and the winning students were presented with the awards next day.

ISA 2012 E3 SSL Summit Session

On November 5, the General Assembly of Members comprising the President, the Secretary-General, Council of Management, Executive Members, Board of Advisors, and Working Group Members met. In the morning session the progress report on various activities were presented. Mr. H.S. Mamak attended this.

In the afternoon, a brain-storming session was held to determine the future course of action. The above members plus a few invitees were divided into six groups. From India, Dr. Sandeep Garg and I attended this session. The most important conclusion of this session are:

- ISA will focus on BRICS countries (Brazil, Russia, India, China and South Africa) at least to start with for sustainable global SSL development. Taken together BRICS cover 30% area of the world, 42% population, but only 18% GDP.
- ISA will support standardisation activities to promote all quality aspects in SSL products and application. ISA will also bring all other standardisation bodies like IES, NEMA and other natural standardisation organisations together in 2013.
- Educational programmes on SSL will be supported along with the publication of top examples of good projects and installations.

In the evening there was a large Banquet.

On November 6, the Summit Session was formally inaugurated. There were welcome address by the Chairman, ChinaSSL 2012, Vice Minister Cao Jianlin of Ministry of Science & Technology, People's Republic of China, congratulatory letter from the Vice Governor of Guangdong Province; Welcome Address by the Vice Mayor of Guangzhou City.

Prof. Warren Julian, Member of the Council of Management representing Illuminating Engineering Society of Australia and New Zealand (IESNA) presented the detailed report on the Global Student SSL Contest. The following companies sponsored the event;

Gold Sponsorship - Philips

Silver Sponsorship - Nationstar and LatticePower

The representative from Philips Electronics, the Netherlands spoke on the 3 Dimensional Lighting display with LEDs by the students of the Delft University of Technology, the Netherlands (DUT). A branch of the DUT has been opened at Beijing recently.

The inaugural session ended with the presentation of prizes to the winners of the GSC.

In the next session there were many interesting presentations. Dr. Cao Jianlin, Vice Minister of Science & Technology (MOST) dealt on the history, current status and future of solid state lighting in China.

- SSL is one of the key areas for China's green development
- China has achieved for white LED an efficiency of 130 lumen per Watt.
- In 2012 there were more than 10 listed companies in China with LEDs as the main business.
- In 2011 the Great Hall of the people at Beijing was retrofitted with LED, where 1000W halogen lamps were changed to 150W LEDs - a top showcase project.
- MOST has launched 10 city showcase programmes with thousands of demo projects. Expected annual energy is saving 500 million kWh
- On Education, in China there are 27 universities offering courses on LEDs, 23 research institutions and 2 engineering and technology research institutes. There is close cooperation between China and the Netherlands, and China and Germany.
- On Environment, there are many challenges; rapidly developing economy and industry: urban population increases annually by 10 million; annual growth of new buildings is 2 million square metres, which is 50% of the global increase; bringing society awareness on energy conservation and environment (emission reduction).
- Close cooperation with ISA.

The Director General of Guangdong Provincial Department of Science & Technology spoke on exploration and promotion of Guangdong LED Industries Development. He said that one of the difficulties and challenges was the lack of LED product quality criteria system, which goes against the control of product quality. To make LED

lighting popular, the consumption and market had to be fully activated through promotion and on innovative commercial approach.

Prof. Dr. G.Q. Zhang, Co-chairman of Board of Advisors, ISA urged the creation of value for sustainable global SSL development, for which the focus should be on BRICS countries.

The European Photonics Industry Consortium (EPIC) representative mentioned that the world is entering the 3rd LED growth cycle. He referred to

- a) *Heitz Laws* - one of them being that cost of lumen reduces by 10% every decade.
- b) The European Digital Agenda 20-20-20: change over to SSL and achieve 20% reduction in energy consumption by 2020.

Mr. Robert E. Kerlick emphasised the need to

- a) Use smart lighting (light where and when needed) more than just illumination;
- b) Google-ize lighting;
- c) Integrate many functions.

He also mentioned that "Lumen per Dollar" should be a more important consideration now than "Lumen per Watt". In other words, he meant that to increase usage of LED, only stressing its luminous efficacy would not be enough, but the prices must come down.

ISA 2012 BRICS E3 SSL Summit

Session One - November 6 Afternoon

Vice Minister Cao Jianlin of MOST and Chairman, CHINASSL 2012 inaugurated the meeting.

All the representatives of BRICS countries presented the status of LED introduction in their countries. Additionally, China presented an overview of China SSL technology. Dr. Sandeep Garg presented Energy Efficiency Policies of India. Mrs. Elsie Coleman of South Africa mentioned that for her country, Renewable Energy was an opportunity.

This was followed by other speakers from industry. Prof. G. Wang, General Manager of a Solar LED Lighting company presented examples of LED street lighting projects in remote areas in China. Mr. Piet Derks, Head of Philips China, mentioned his company's involvement in LED lighting introduction in BRICS countries. Osram representatives stressed their position as the global lighting industry. Mr. Mark McClear, Vice President, Applications Engineering of CREE, USA stated their mission to lead the LED lighting revolution to make inefficient lighting obsolete. The representative of EPIC shared their views on supporting market development.

In the evening, delegates were taken to China Long Hotel. There was dinner buffet at White Tiger Restaurant in a beautiful setting with good views of two white tigers on a large ground on one side and birds around a pond on the other side. After dinner, delegates a walked down to the adjoining China Long International Circus. The 90 minute programme simply enthralled everyone; something most had not experienced before.

Session Two - November 7

This session was devoted to BRICS SSL Network Internal Discussion.

BRICS representatives: Prof Flavio Plentz of Brazil; Sergey V. Kuzumov, Deputy Head, Voronezh State University of Engineering Technology, Russia; Dr. Sandeep Garg of India; Mr. Qiang Fu of China and Ms. Elsie Coleman, Member of Parliament, South Africa gave their suggestions on SSL related policies and Industry Development.

The ISA Secretariat introduced a framework for BRICS SSL Network (BSNet). Discussions that followed covered BSNet Logical framework, principles, proposal actions,

the Role of ISA and supporting measures. Some of the important points raised were having common standards for BRICS countries, education and training, what BRICS countries could do by themselves and what help from, ISA was needed.

The session ended with the formulation of a draft BSNet and a tentative decision that the next meeting of BRICS countries would be held in India.

At the end the overriding impressions were that the ISA 2012, E3 SSL Summit Session was very well organised, that SSL introduction in most parts of the world would be a reality soon with the support from all stakeholders, and that many countries, particularly China, have made good progress in the field of SSL.

Pranab K Bandyopadhyay
Past President, ISLE
Member, CIE Div.5, Exterior Illumination and other Applications
Advisor (Design), School of Illumination Science, Engg. & Design, Jadavpur University
Chairman, BIS Committee on Luminaires & Illuminating Engineering

PROPOSED REVISION OF MEMBERSHIP FEES

At the last meeting of the Governing Body on December 29, 2012 it was observed that the current membership fees of ISLE needed to be revised upwards to reflect the increase in costs of services incurred by the Society. In view of this it was suggested that the following membership fee structure be adopted.

Class of Member	ENTRANCE FEE		TRANSFER FEE		ANNUAL FEE		LIFE MEMBERSHIP	
	Present (Rs.)	Revised (Rs.)	Present (Rs.)	Revised (Rs.)	Present (Rs.)	Revised (Rs.)	Present (Rs.)	Revised (Rs.)
Big Companies	3000	6000	Nil		5000	10000	50000	100000
Small Companies	1000	2000	Nil		2000	4000	20000	40000
Fellow	200	400	Nil		250	500	2500	5000
Member	150	300	100	200	200	400	2000	4000
Associate	100	200	100	200	150	300	1500	3000
Student	Nil	50	Nil		50	100	Nil	

Members are requested to give their response to this proposed revision by March 31, 2013 to

Hon. Gen. Secretary
ISLE
C/o Thorn Lighting
A 274 Defence Colony
1stFloor
New Delhi 110 024
Email: isledel@vsnl.com

This Could Change The Way We Live

That is according to Dezeen - an online design publisher that brings you a carefully edited selection of the best architecture, design and interiors projects from around the world. Dezeen was launched at the end of November 2006 and has grown rapidly to become one of the most popular and influential architecture and design blogs on the internet. In their Christmas issue of the online magazine, they have made a movie about how OLED lighting technology will change interior design and the way we will use light.

Glowing walls, windows and furniture will replace light bulbs and LEDs in homes as OLED (organic light-emitting diode) technology improves, according to Dietmar Thomas of Philips Lumiblade.

"Just imagine windows where transparent OLEDs are integrated," says Thomas. "During the day the sun shines into the room and at night you're not switching on the ceiling lamp or the wall lamp, you're switching on the window."

The low working temperature of OLEDs - around 30 degrees centigrade - mean that lighting source can be integrated into furniture, Thomas says, and even painted onto walls.

"OLED will open up completely new ways where light can be introduced to the customer," Thomas says. "In the far future, say five or 10 years or so, you'll paint the wall with a colour with OLEDs mixed into it, so when you apply a current, the whole wall lights up."

Link

<http://www.lumiblade-experience.com/>

LED Market Spurs Transformation in Europe's Professional Lighting Industry

As the European market continues to adopt and embrace LED-based lighting systems, further changes will be required of both traditional lighting-industry players and LED component suppliers.

The European professional lighting industry is one of the largest and most innovative lighting markets in the world. With its transformation towards LED sources and solid-state lighting (SSL), this hive of activity is a very interesting market to be in at the moment. But take a step back, scratch the surface and observe what is going on and it becomes apparent that there is a clash of two fundamentally different industries with totally different DNA, who do not actually understand each other very

well yet. A similar scenario in lighting is also playing out in other regions around the globe.

On one side, we have the lamp and luminaire manufacturers, installers and lighting specifiers from the traditional lighting industry. On the other side there are the LED and component suppliers from the semiconductor industry.

The latter group is highly dynamic, rational, volume-oriented and used to continuous change. It makes its living out of fast-moving, ever-evolving technology steps and short product lifecycles. The other group is slow to adopt change, and is used to stability, traditional methods of working and gradual improvements in a technology which has been around for over a century.

Intentions and expectations on both sides about LED adoption and penetration in the general lighting market are genuine and realistic. But do both parties actually appreciate the scale of the upheaval, the level of compromise and the changes in processes, behavior and thinking that will be required to realize this? It begins with understanding the world in which the other party operates.

Link:

<http://ledsmagazine.com/features/9/12/12>

Lighting the Way: Perspectives on the Global Lighting Market (Second edition; 2012) - McKinsey

While many of the findings in McKinsey's 2011 "Lighting the way" report - the first to provide a holistic view of the fragmented and complex global lighting industry - still hold true in general today, some key market parameters have shifted due to world events over the past year. This second edition addresses recent changes in the lighting market environment, updating the 2011 findings with a particular focus on the accelerated erosion of LED prices. The impact of the transition from traditional lighting technologies to LED is likely to be dramatic in the years ahead, affecting players in all related sectors.

Link:

<http://www.led-professional.com/business/reports/lighting-the-way-perspectives-on-the-global-lighting-market-second-edition-2012-executive-summary-mckinsey>

The full report can be downloaded for free at

<http://www.led-professional.com/business/reports/lighting-the-way-perspectives-on-the-global-lighting-market-second-edition-2012-executive-summary-mckinsey/McKinsey%20-%20Company%20-%20Lighting%20the%20Way%202012.pdf>

Now, a Bulb Powered by Gravity for India

A British company has developed new 'incredible' light bulbs which are powered by gravity, for free distribution to communities in India and Africa who do not have reliable access to electricity.

The 'GravityLight' uses a sack of sand to gradually pull a piece of rope through a dynamo mechanism which generates electricity to power an Light Emitting Diode (LED) light.

Manufacturers claim a three-second pull on the rope to raise the sack will keep the LED bulb running for up to 30 minutes, the 'Daily Mail' reported.

The London-based design and innovation initiative deciwatt.org, designed the GravityLight as a sustainable solution for 1.5 billion people who rely on biomass fuels like kerosene for lighting, which can be hazardous to health.

Deciwatt.org, a division within design company Therefore, said the trend for rapid advances in technology has made their product possible.

The relatively simple devices progressively need less energy to run, making possible a whole range of relatively simple gadgets that can be powered by unconventional means.

Link:

<http://www.indianexpress.com/news/now-a-bulb-powered-by-gravity-for-india/1048070>

MEMBERSHIP APPLICATIONS APPROVED BY GOVERNING BODY

New Members Admitted on 27th November 2012

F.0771(L)	K.T. Pradeep Asst. Genl. Manager (EE) Airports Authority of India Calicut International Airport Kairaleeyam, Parammel Road Ramanattukara Calicut 673 633	Fellow (Life)	Chennai
M.1760(L)	Joel Anthony S-124 Ground Floor Greater Kailash-II New Delhi 110 048	Member (Life)	Delhi
M.1761(L)	Deepak S. Shah Shanti Sadan 4/35 Nayapura Patthar Godam Road Indore 452 003	Member (Life)	MP
M.1762(L)	Kala Bhandari Metal Craft G-7, Ambattur Industrial Estate Chennai 600 058	Member (Life)	Chennai
M.1763(L)	Sharmila Kumbhat Klite Industries D-10, Ambattur Industrial Estate Chennai 600 058	Member (Life)	Chennai

A.1130(L)	Vivek Taneja 51, Ravindra Nagar Ujjain, M.P.	Associate (Life)	MP
A.1131(L)	Anamika Singh Asian Retail Lighting Ltd. 2nd Floor, Professional Court at 27/7 15th Cross, Jayanagar 3rd Block Bangalore 560 011	Associate (Life)	Karnataka
A.1132(L)	Samar Ranjan Future Lighting India Ltd. 2nd Floor, Professional Court at 27/7 15th Cross, Jayanagar 3rd Block Bangalore 560 011	Associate (Life)	Karnataka
S.1289	Md. Rashid Alam	Student	Chennai
S.1290	Md. Seemab Athar	Student	Chennai
S.1291	Mohammed Hasnan	Student	Chennai
S.1292	Mohammed Amair Ali	Student	Chennai
S.1293	Mohammed Vaseem	Student	Chennai
S.1294	Mohd. Abdul Adil	Student	Chennai
S.1295	S.K. Masoom Hussain	Student	Chennai
S.1296	Mohd. Abdul Raheel	Student	Chennai
S.1297	Mohd. Addul Haseeb	Student	Chennai
S.1298	Mohd. Amer Ali	Student	Chennai
S.1299	Mohd. Mudassir Shareef	Student	Chennai
S.1300	Nasiri Zubair Ahmed	Student	Chennai
S.1301	Shamsh Tabrez Alam	Student	Chennai
S.1302	Khazi Waheeduddin	Student	Chennai
S.1303	Maaz Ashrafi	Student	Chennai
S.1304	Abdul Hyder	Student	Chennai
S.1305	Syed Afrozuddin	Student	Chennai
S.1306	Syed Abdul Khaliq	Student	Chennai
S.1307	Venkatesham Bijjala	Student	Chennai
S.1308	Nagaraju Mamindla	Student	Chennai
S.1309	Chittala Mukul	Student	Chennai
S.1310	Indra Kumar Palle	Student	Chennai
S.1311	K. Sampath Reddy	Student	Chennai
S.1312	Shanmukh Reddy Manne	Student	Chennai
S.1313	Pradeep Kumar Gorajawa	Student	Chennai
S.1314	Md. Ejaz	Student	Chennai
S.1315	Md. Azharuddin	Student	Chennai
S.1316	Munnawar Moniuddin Khaja	Student	Chennai
S.1317	Mehboob Chand	Student	Chennai
S.1318	Ameen Mohammed Khan	Student	Chennai
S.1319	Ajman Sartaraj	Student	Chennai
S.1320	Soubaan Ali Khan	Student	Chennai
S.1321	Prince Kumar Varma	Student	Chennai
S.1322	Mohd. Tabrez Ali	Student	Chennai
S.1323	Mohd. Faisal Majeed Ullah	Student	Chennai
S.1324	Mohammed Abdul Haq	Student	Chennai
S.1325	Mohammed Hasnuddin	Student	Chennai

New Members Admitted on 13th December 2012

I.0165	Glow Green Energy Ltd. 122 Gagan Vihar Extension Delhi 110 051	Institutional	Delhi
IM.0165	Aditya Malik Glow Green Energy Ltd. 122 Gagan Vihar Extension Delhi 110 051	Institutional Representative	Delhi
I.0166	Lighto Technologies Pvt. Ltd. R-401, Rohan Mithila Near VIP Road, Near Airport Pune		
IM.0166	Naveen Saxena Lighto Technologies Pvt. Ltd. R-401, Rohan Mithila Near VIP Road, Near Airport Pune	Institutional Representative	Mumbai

I.0167	Prestige Costings Pvt. Ltd. A31 Laghu Udyog Kendra I.B. Patel Road, Goregaon (E) Mumbai 400 063	Institutional	Mumhai	M.1768	Seema Mathew Asst. Professor, Electrical Dept. P.E.S. Modern College of Engg. Pune 411 005	Member	Mumbai
IM.0167	Amit Azad Patil Prestige Costings Pvt. Ltd. A31 Laghu Udyog Kendra I.B. Patel Road, Goregaon (E) Mumbai 400 063	Institutional Representative	Mumhai	M.1769	Pallavi Suhaj Jadhav 52/3, Parvati Darshan Behind Police Chowki Pune 411 009	Member	Mumbai
I.0168(L)	Standard Conduits 2/3 Ashok Chambers Ground Floor Devji Ratansy Marg (Broach Street) Masjid (E) Mumhai 400 009	Institutional (Life)	Mumhai	M.1770	Shalaka Nitin Chaphekar Flat No. 103, Silver Oak Rt. Bhusari Colony, Kothrud Pune 411 038	Member	Mumbai
IM.0168	Chitrak Desai Standard Conduits 2/3 Ashok Chambers Ground Floor Devji Ratansy Marg (Broach Street) Masjid (E) Mumhai 400 009	Institutional Representative	Mumhai	M.1771	Rajesh Harjai WZ-765, Rishi Nagar Shakurbasti Delhi 110 034	Member	Delhi
F.0772(L)	Jagdish C. Bhatt B-248, Pocket-11 DDA Flats, Jasola Vihar New Delhi 110 025	Fellow (Life)	Delhi	M.1772	Chhunna Lal 52-A, Pocket-E, LPG Flats GTB Enclave, Near GTB Hospital Delhi 110 095	Member	Delhi
F.0773(L)	Nem Chandra Singhal Flat 8-B, J & K Pocket Dilshad Garden, Shahdara Delhi 110 095	Fellow (Life)	Delhi	M.1773	P.L. Rajani 20/1 D/S Ramesh Nagar New Delhi 110 015	Member	Delhi
F.0774(L)	Sandeep Garg Flat No. 374, Sector-28 Noida 201 301	Fellow (Life)	Delhi	A.1133(L)	Sanjay Verma B-3/12, E.W.S. Flats Shiv Shakti Apts, Sector -71 Noida 201 301	Associate (Life)	Delhi
F.0775(L)	Tapan Kumar Chattopadhyay ISLE A-274, First Floor Defence Colony New Delhi 110 024	Fellow (Life)	Delhi	A.1134(L)	Smriti Chopra E-169, First Floor Kalkaji New Delhi 110 019	Associate (Life)	Delhi
F.0776(L)	Ulhas S. Vajre B-13, Suryagayatri Plot No. D14/15, Sector 6 New Panvel (E) Navi Mumbai 410 206	Fellow (Life)	Mumbai	A.1135(L)	Abhay Amrit Shah Flat 501, 5th Floor Building 11A Neelam Nagar Phase II Gavanpada, Mulund (E) Mumbai 400 081	Associate (Life)	Mumbai
F.0777(L)	Ketan Mulchand Chheda Silver Light T-6, Seksaria Indl. Estate S.V. Road, Malad W Mumbai 400 064	Fellow (Life)	Mumbai	S.1326	Surya Bedi	Student	Delhi
F.0778(L)	Vipul Jayantilal Mistry Ivytech Gala No. 35/5 New Ashirwad Ind. Estate Oshiwara, Goregaon (W) Mumbai 400 104	Fellow (Life)	Mumbai	S.1327	HariPriya Singh	Student	Delhi
F.0781	Deepak Arvind Savla Nucon Products P. Ltd. 4, Mayur Apartment, Area 771 off Bhandarkar Road Deccan Gymkhana Pune 411 004	Fellow	Mumbai	S.1328	Tapan Pandey	Student	M.P.
M.1764(L)	Vikrant Chopra E-169, First Floor Kalkaji New Delhi 110 019	Member (Life)	Delhi	S.1329	Pallavi Joshi	Student	M.P.
M.1765(L)	Ismail Kikabhai Bhadka B-204 Deccan Yashshri Apt. Manvelpada Road, Opp. Church Virar (E) 401 303	Member (Life)	Mumbai	S.1330	Devika Mandloi	Student	M.P.
M.1767(L)	Muffadal Zoeb Darukhanawalla Fedco (India) Shop No. 4, Mihir Apts. Bhairoba Nala, Sholapur Road Pune 411 013	Member (Life)	Mumbai	S.1331	Abhishek Satish Kulkarni	Student	Mumbai
				S.1332	Madhav Rajendra Upadhye	Student	Mumbai
				S.1333	Ajinkya Shirish Wajpe	Student	Mumbai
				S.1334	Kushal Babulal Patti	Student	Mumbai
				S.1335	Vipul Shashikant Nevkar	Student	Mumbai
				S.1336	Gajendra Janardhan Shobhange	Student	Mumbai
				S.1337	Prashant Ashok Kamble	Student	Mumbai
				S.1338	Prasad Pramod Dongare	Student	Mumbai
				S.1339	Saurabh Prakash Paranjape	Student	Mumbai
				S.1340	Nakul Vasant Rao Gawande	Student	Mumbai
				S.1341	Kushal Kailas Shete	Student	Mumbai
				S.1342	Vijay Siddheshwar Kamble	Student	Mumbai
				S.1343	Swapnil Suresh Rao Bhanap	Student	Mumbai
				S.1344	Tejas Rajan Bhavne	Student	Mumbai
				S.1345	Priyanka Uday Deshpande	Student	Mumbai
				S.1346	Pallavi Chandrakant Sandav	Student	Mumbai
				S.1347	Ashwini Bhauso Patil	Student	Mumbai
				S.1348	Namrata Sunil Kulkarni	Student	Mumbai
				S.1349	Gunjan Singh Devendra Thakur	Student	Mumbai
				S.1350	Snehal Dnyandeo Gadekar	Student	Mumbai
				S.1351	Nandram Mahadeo Mhatre	Student	Mumbai
				S.1352	Dhananjay Yashavaant Magar	Student	Mumbai
				Transfer of Grade			
				F.0780(L)	Mahendra Nagindas Damania C/502, Vikas Park Mith Chauki Jn, Malad (W) Mumbai 400 064	Fellow from M.0046(L)	Mumbai

M.1766(L)	Sanjeev Amritlal Chheda Mahavir Engineering Corporation T-5, Seksaria Ind. Estate Chincholi Naka, S.V. Road Malad (W) Mumbai 400 064	Member from A.0351(L)	Mumbai	M.1780(L)	Aashutosh Dubey Oscar Electrical 99, Silver Oaks Colony Annapurna Road Indore	Member	MP
New Members Admitted on 11th January 2013							
I.0169	Al Habeeb College of Engg. & Tech Damergidda (V), Chevella (M) R R Dist. 501 503 (Andhra Pradesh)	Institutional	Chennai	M.1781(L)	Ritu Sharma Codexo Facilities Mgmt. Services (I) Pvt Ltd 110/1 M Krishnappa Layout Opp. IOCL Petrol Bunk Lalbagh Road Bangalore 560 077	Member (Life)	Karnataka
IM.0169	Syed. Karimulla Al Habeeb College & Engg & Tech Damergidda (V), Chevella (M) R R Dist. 501 503 (Andhra Pradesh)	Institutional Member	Chennai	A.1136(L)	Noosheen Jafri Mahindra Two Wheelers Ltd Plot No. 2, Inld. Area No. 1 Pithampur Dist. Dhar 454 775	Associate (Life)	Mumbai
F.0782(L)	Pradeep Chaturvedi C-4, Gulmohar Park New Delhi 110 049	Fellow	Delhi	A.1138	Nishant Lomash UL India Pvt Ltd 4-C, Nanda Devi BARC Colony Anushakthi Nagar Mumbai	Associate	Mumbai
F.0784(L)	Suresh Prasad Pyarelal Goswami C/5 BEST Officers Quarters Altamount Road, Cumballa Hill Mumbai 400 026	Fellow	Mumbai	Transfer of Grade			
M.1774	Rabindra Nath Jana G-311, Agrasen APH 66, I.P. Extension, Patparganj Delhi 110 092	Member	Delhi	M.1447(L)	Ajay Prakash Sharma J 20/233 West Sagarpur Pankha Road New Delhi 110 046	Fellow From F.0783(L)	Delhi
New Members Admitted on 31st January 2013							
M.1775(L)	Sukku Singh Tomar Mahindra Two Wheelers Ltd Plot No. 2, Inld. Area No. 1 Pithampur Dist. Dhar 454 775	Member	MP	F.0785(L)	Rameshwar Nath Srivastava 10, Zakir Bagh Okhla Road New Delhi 110 025		Delhi
M.1776(L)	Gajendra Kumar Yashlaha 77-B, Nemi Nagar, Jain Colony Babu Labhchand Chhajlani Marg Indore	Member	MP	M.1782(L)	Visswapriya Prabakar 18721 Newsom Ave Cupertino CA 95014 USA		Overseas
M.1777(L)	Pradeep Sharma 14, Agarwal Nagar Near Gomti Nagar, A.B. Road Dewas 455 001 (Madhya Pradesh)	Member	MP	M.1783(L)	J.N. Praveen Thantry G 003, MBM Residency 1st Main, Doctors Layout Simha Colony, Chikkalasandra Bangalore 560 061		Karnataka
M.1778(L)	Pradeep Chhabra Pee Cee Engg. 956, Khatiwala Tank Indore	Member	MP	A.1139(L)	Mayuri Govil Thorn lighting India Pvt Ltd 43, Chamiers Road Ground Floor, R.A. Puram Chennai 600 028		Chennai
M.1779(L)	Bhumika Chainani Eleganteriors 201, Block-A-Twin star Above UCO Bank Anand Bazar Square Indore	Member	MP				

Call for Nominations for ISA Awards

The International SSL Alliance (ISA) has called for nominations for the annual awards for Outstanding Achievement for Global SSL Development.

The purpose of the awards is to recognize outstanding achievement by individuals or organisations to global SSL development.

The Awards are given for the following categories:

- Outstanding Achievement on SSL Science and Technology
- Outstanding Achievement on SSL Standardisation
- Outstanding Achievement on SSL Policy
- Outstanding Achievement on SSL Application
- Outstanding Achievement on SSL Industry

Nominations need to be submitted by May 1, 2013.

Interested persons should contact the ISLE Secretariat at isledel@vsnl.com

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HO CHI MINH CITY | KUALA LUMPUR | LIMA | LISBON | LES CULLAYES (CH)
MONTREAL | MOSCOW | NEW DELHI | PARIS | PRAGUE | PRETORIA | QUITO
RHENEN (NL) | SANTIAGO | SAO PAULO | TERNOPII | TIANJIN | TORINO
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